

12.(Amended) A superconducting combination, including a superconductive composition having a transition temperature $> 260^{\circ}\text{K}$,

means for passing a superconducting electrical current through said composition while said composition is at a temperature $> 26^{\circ}\text{K}$, and less than said transition temperature, and

cooling means for cooling said composition to a superconducting state at a temperature in excess of 260°K .

24. (Twice Amended) An apparatus comprising:

a transition metal oxide having a phase therein which exhibits a superconducting state at a critical temperature in excess of 26°K ,

means for maintaining the temperature of said material at a temperature less than said critical temperature to produce said superconducting state in said phase, and

means for passing an electrical [supercurrent] superconducting current through said transition metal oxide while it is in said superconducting state.

34. (Amended) A superconducting apparatus having a superconducting onset temperature in excess of 260°K , the composition being comprised of a mixed copper oxide doped with an element chosen to [create] to result in Cu^{3+} ions in said composition and a means for passing a superconducting current through said superconducting composition.

36.(Amended) A combination comprising:

a composition having a superconducting onset temperature in excess of 26°K . said

composition being comprised of a substituted copper oxide exhibiting mixed valence states and at least one other element in its crystalline structure, means for passing a superconducting electrical current through said composition while said composition is at a temperature in excess of 26°K and less than said superconducting onset temperature, and

cooling means for cooling said composition to a superconducting state at a temperature in excess of 26°K.

38. (Amended) The combination of claim 36, where said at least one other element is an element which [creates] results in Cu^{3+} ions in said composition.

39. (Amended) The combination [composition] of claim 36, where said at least one other element is an element chosen to [create] result in the presence of both Cu^{2+} and Cu^{3+} ions in said composition.

40. (Twice Amended) An apparatus comprising superconductor exhibiting a superconducting onset at an onset temperature in excess of 26°K, said superconductor being comprised of at least four elements, none of which is itself superconducting at a temperature in excess of 26°K, means for maintaining said superconductor at an operating temperature in excess of said onset temperature to maintain said superconductor in a superconducting state and means for passing current through said superconductor while in said superconducting state above 26°K.

42. (Amended) A apparatus having a superconducting onset temperature greater 26°K, said superconductor being a doped transition metal oxide, where said transition metal is itself non-superconducting and means for passing a superconducting electric current through said composition.

46. (Amended) An apparatus having a superconductor having a superconducting onset

CS
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temperature greater than 26°K, said superconductor being an oxide having multivalent oxidation states and including a metal, said oxide having a crystalline structure which is oxygen deficient a means for passing a superconducting electric current through said superconductor.

CA
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G1
48.(Amended) A superconductive apparatus comprising a superconductive composition comprised of a transition metal oxide having substitutions therein, the amount of said substitutions being sufficient to produce sufficient electron-phonon interactions in said composition that said composition exhibits a superconducting onset at temperatures greater than 26°K

55.(Amended) A combination, comprising:

CLD
Sub
G1
a transition metal oxide having an superconducting onset temperature greater than about 26°K, and having an oxygen deficiency, said transition metal being non-superconducting at said superconducting onset temperature and said oxide having multivalent states, means for passing an electrical superconducting current through said oxide while said oxide is at a temperature greater than 26°K, and cooling means for cooling said oxide in a superconducting state at a temperature greater than 26°K.

57.(Amended) A combination including;

CL1
Sub
G1
a superconducting oxide having a superconducting onset temperature in excess of 26°K and containing at least 3 [non-superconducting elements] which are non-superconducting at said onset temperature,

Sub
G1
means for passing a [supercurrent] superconducting current through said oxide while said oxide is maintained at a temperature greater than 26°K, and

means for maintaining said oxide in a superconducting state at a temperature greater than 26°K and less than said superconductive onset temperature.

58. (Amended) A combination, comprised of:

C11
a copper oxide superconductor having a superconductor onset temperature greater than about 26°K, including an element which [creates] results in a mixed valent state in said oxide, said oxide being crystalline and having a layer-like structure,

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means for passing a [supercurrent] superconducting current through said copper oxide while it is maintained at a temperature greater than 26°K and less than said superconducting onset temperature, and

means for cooling said copper oxide to a superconductive state at a temperature greater than 26°K and less than said superconducting onset temperature.

59. (Amended) A combination, comprised of:

ceramic-like
a [superconducting ceramic-like] material having an onset of superconductivity at [a] an onset temperature in excess of 26°K.,

sub
means for passing a [supercurrent] a superconducting electric current through said [superconducting ceramic-like] material while said ceramic-like material is maintained at a temperature in excess of 26°K. and less than said onset temperature, and

means for cooling said superconducting [ceramic-like] material to a superconductive state at a temperature greater than 26°K and less than said onset temperature, said material being superconductive at temperatures below said onset temperature and a ceramic at temperatures above said onset temperature.

64. (Amended) A combination, comprising:

a mixed copper oxide composition having enhanced polaron formation, said composition including an element causing said copper to have a mixed valent state in said composition, said composition further having a distorted octahedral oxygen environment leading to a T_c greater than 26°K.,

means for providing a [supercurrent] superconducting current through said composition at temperatures greater than 26°K and less than said T_c , and

cooling means for cooling said composition to a temperature greater than 26°K and less than said T_c .

69. (Amended) A superconductive combination, comprising:

a superconducting composition exhibiting a superconducting transition temperature greater than 26°K, said composition being a transition metal oxide having a distorted orthorhombic crystalline structure, and

means for passing a superconducting electrical current through said composition while said composition is at a temperature greater than 26°K and less than said superconducting transition temperature.

77.(Amended) A combination, comprising:

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a mixed copper oxide composition including an alkaline earth element (AE) and a rare earth or rare earth-like element (RE), said composition having a layer-like crystalline structure and multi-valent oxidation states, said composition exhibiting a substantially zero resistance to the flow of electrical current therethrough when cooled to a superconducting state at a temperature in excess of 26°K, said mixed copper oxide having a superconducting onset temperature greater than 26°K and electrical means for passing an electrical [super-current] superconducting current through said composition when said composition exhibits substantially zero resistance at a temperature greater than 26°K and less than said onset temperature.

84.(Amended) A superconducting combination, comprising:

C15
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a mixed transition metal oxide composition containing a non-stoichiometric amount of oxygen therein, a transition metal and at least one additional element, said composition having substantially zero resistance to the flow of electricity therethrough when cooled to a superconducting state at a temperature greater than 26°K, said mixed transition metal oxide has a superconducting onset temperature in excess of 26°K and

electrical means for passing an electrical [supercurrent] superconducting current through said composition when said composition is in said superconducting state at a temperature greater than 26°K, and less than said superconducting onset temperature.

86. (Twice Amended) An apparatus comprising:

C16
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a composition including a transition metal, a rare earth or rare earth-like element, an alkaline earth element, and oxygen, where said composition is a mixed transition [metla]

metal oxide having a non-stoichiometric amount of oxygen therein and exhibiting a superconducting [state at a] onset temperature greater than 26°K,

means for maintaining said composition in said superconducting state at a temperature greater than 26°K and less than said superconducting onset temperature, and

means for passing an electrical current through said composition while said composition is in said superconducting state.

109. (Added) A superconductive apparatus comprising a composition having a transition temperature greater than 26°K, the composition including a rare earth or alkaline earth element, a transition metal element capable of exhibiting multivalent states and oxygen, including at least one phase that exhibits superconductivity at temperature in excess of 26°K means for maintaining said composition at said temperature to exhibit said superconductivity and means for passing an electrical superconducting current through said composition while exhibiting said superconductivity.

110. (Added) The combination of claim 15, where said additional element is rare earth or alkaline earth element.

111. (Added) A device comprising a superconducting transition metal oxide having a superconductive onset temperature greater than 26°K, said superconducting transition metal oxide being at a temperature less than said superconducting onset temperature and having a superconducting current flowing therein.

112. (Added) A device comprising a superconducting copper oxide having a superconductive onset temperature greater than 26°K, said superconducting copper

oxide being at a temperature less than said superconducting onset temperature and having a superconducting current flowing therein.

113. (Added) A device comprising a superconducting oxide composition having a superconductive onset temperature greater than 26°K, said superconducting copper oxide being at a temperature less than said superconducting onset temperature and having a superconducting current flowing therein, said composition comprising at least one each of rare earth, an alkaline earth, and copper.

114. (Added) A device comprising a superconducting oxide composition having a superconductive onset temperature greater than 26°K, said superconducting copper oxide being at a temperature less than said superconducting onset temperature and having a superconducting current flowing therein, said composition comprising at least one each of a group IIIB element, an alkaline earth, and copper.

115. (Added) A device comprising a transition metal oxide having a T_c greater than 26°K carrying a superconducting current.

116. (Added) An apparatus comprising a transition metal oxide having a T_c greater than 26°K carrying a superconducting current.

117. (Added) A structure comprising a transition metal oxide having a T_c greater than 26°K carrying a superconducting current.

118. (Added) An invention comprising a transition metal oxide having a T_c greater than 26°K carrying a superconducting current.

119. (Added) A device comprising a copper oxide having a T_c greater than 26°K carrying a superconducting current.

120. (Added) An apparatus comprising a copper oxide having a T_c greater than 26°K carrying a superconducting current.

121. (Added) A structure comprising a copper oxide having a T_c greater than 26°K carrying a superconducting current.

122. (Added) An invention comprising a copper oxide having a T_c greater than 26°K carrying a superconducting current.

123(Added). A superconductive apparatus comprising:

a composition of the formula $Ba_{1-x}La_xCu_5O_{7-y}$, wherein x is from about 0.75 to about 1

and

y is the oxygen deficiency resulting from annealing said composition at temperatures from about

540°C to about 950°C and for times of about 15 minutes to about 12 hours, said composition

having a metal oxide phase which exhibits a superconducting state at a critical temperature in excess of 26°K;

a means for maintaining the temperature of said composition at a temperature less than

said critical temperature to induce said superconducting state in said metal oxide phase; and

a means for passing an electrical current through said composition while said metal oxide phase is in said superconducting state.

124. (Added) A device comprising a composition of matter having a T_c greater than 26°K carrying a superconducting current, said composition comprising at least one each of a IIIB element, an alkaline earth, and copper oxide.

125. (Added) A structure comprising a composition of matter having a T_c greater than 26°K carrying a superconducting current, said composition comprising at least one each of a rare earth, an alkaline earth, and copper oxide.

125. (Added) A structure comprising a composition of matter having a T_c greater than 26°K carrying a superconducting current said composition comprising at least one each of a IIIB element, an alkaline earth, and copper oxide.

126. (Added) A structure comprising a composition of matter having a T_c greater than 26°K carrying a superconducting current, said composition comprising at least one each of a rare earth, and copper oxide.

127. (Added) A structure comprising a composition of matter having a T_c greater than 26°K carrying a superconducting current, said composition comprising at least one each of a IIIB element, and copper oxide.

128. (Added) A transition metal oxide comprising a $T_c > 26°K$ and carrying a superconducting current.

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only

129. (Added) A copper oxide comprising a $T_c > 26^\circ\text{K}$ and carrying a superconducting current.

~~Non-ducted~~

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